ABSTRACT

[0059] A method of increasing the monomolecular recombination and the immunity to noise of a continuously tunable laser is disclosed. A concentration of recombination centers in the range of about $1x10^{16}cm^{-3}$ to about $1x10^{18}cm^{-3}$ in the tuning region of the laser device is achieved by doping the waveguide layer with impurity atoms, by irradiating the waveguide layer with high energy particles or by varying the growth conditions of the waveguide layer to introduce native point defects due to lattice mismatch. This way, the monomolecular recombination is increased and the radiative recombination over low current ranges is reduced. By increasing the monomolecular recombination, the immunity to noise is improved but the tuning efficiency is reduced. Nevertheless, only a minimal effect on the tuning efficiency is noted over high current ranges and, therefore, the overall tuning range is only insignificantly changed.